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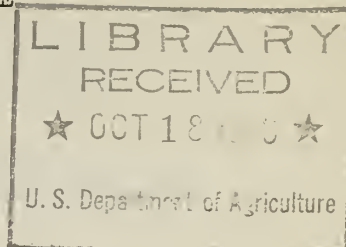


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UNITED STATES DEPARTMENT OF AGRICULTURE  
U. S. Food Distribution Administration



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ADEQUACY OF REFRIGERATED STORAGE SPACE FOR APPLES AND PEARS

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By Hugh L. Cook, Junior Agricultural Economist

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ADEQUACY OF REFRIGERATED STORAGE SPACE FOR APPLES  
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Apple Crop Down About 31,000,000 Bushels Below Average; Pear Crop 2,600,000 Bushels Below Average

According to the Crop Reporting Board's estimate as of September 1, 1943, the combined apple and pear crops this year for the United States will be less than the production for 1942 by about 26 percent. Furthermore, the indication is that the two crops will be about 23 percent less than the average production for the years 1934 to 1939. Estimates on the basis of the condition of the crop as of September 1, show 92,392,000 bushels for 1943, as compared with 127,228,000 bushels for 1942 and 123,414,000 as an adjusted national average. Pear production is estimated at 22,962,000 for 1943, to be compared with 28,426,000 for 1942 and 25,592,000 as a national average. (See table 1.)

Are Storages Adequate? 1/

The apple and pear crops are considered together, because they are stored in the same type facilities. Although the peaks for the two crops do not coincide, there is an overlapping between the apple and pear storage periods.

If the same proportion of the apple and pear crop is placed in storage this year as last year, the peak storage requirement will be only about 28,000,000 bushels, as compared with the peak storage requirement of 38,000,000 bushels last year. (See table 2.) As a matter of fact the capacity of coolers in apple houses exceeds the expected peak storage requirements of apples and pears by almost 16,000,000 bushels, but as usual the surplus space is not always in the neighborhood of the high crop yield. On December 1 of last year, some 11,000,000 bushels of apples and pears were being held in general cold storage houses, located principally in the larger cities. Only some 2,000,000 bushels will necessarily go into general cold storage this year, if the apple houses within a State are filled to capacity with apples and pears produced within that State.

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1/ This entire estimate is based on the assumption that apples and pears produced within a State will fill to capacity the apple house coolers within the State, and that the balance will move to general cold storage. This assumption, of course, is made to simplify the comparison of production with storage capacity.

The refrigerated storage houses of this country which store apples and pears, almost exclusively, have a capacity of approximately 44,370,000 bushels. This capacity is greater by some 2,300,000 bushels than the reported capacity as of December 1, 1941, due to space which has been built or converted since that time. In this increased capacity, there is expected to be stored a crop substantially 26 percent less than that of last year.

#### General Condition of Crop

The only States in which production is expected to be above that of 1942, are Vermont, Wisconsin, Minnesota, Montana, Utah, New Mexico, and California. Among these, California is the only major producing State. In the following States production is estimated to be less than 75 percent of that of 1942: Connecticut, New York, New Jersey, Pennsylvania, in the North Atlantic group; all the South Atlantic States; all the North Central States except Illinois, Wisconsin, Minnesota, and Missouri; all the South Central States except Kentucky and Arkansas; and Idaho in the West.

The five major producing States, which are New York, Pennsylvania, Virginia, Washington, and Michigan, normally produce 55 percent of the national apple and pear crop. This year these five States are producing 20,500,000 bushels less than the 81,814,000 bushels average for those States. Virginia, normally third highest producer, is producing only about 40 percent of her 1942 crop and about 50 percent of her average crop. Even Washington, where the crop is relatively good, is off 15 percent both from last year and from the average. Normally, Washington alone produces 23 percent of the national crop of apples and pears.

It would appear that the best crop is in the Western States, excepting Idaho; the South Central States; in Maine and Vermont; and in the northern part of the Michigan apple belt.

#### General Adequacy of Storage

Of the 20 States storing more than 100,000 bushels of the apples and pears at the storage peak, 12 have sufficient space to store all the expected peak holdings in apple houses alone, within the State boundaries.

Each of the heavier producing States--those producing as many as 1,000,000 bushels per year--has capacity for storing 70 percent or more of the expected peak storage requirement for apples and pears in apple houses alone, within the State.



### Adequacy of Storage by States

In the North Atlantic States the following State groupings seem to have adequate capacity in apple houses: Rhode Island and Connecticut, New York and Pennsylvania. As a matter of fact, there appears to be considerable excess capacity in apple houses in these States, above the actual demands of the apple crop. (See table 2, column 11.)

From the Maine, New Hampshire, and Vermont group only about 10,000 bushels should necessarily go into general cold storage. In Massachusetts 87 percent of the expected peak can be stored in apple houses and only about 127,000 bushels will be necessarily stored in general cold storage. This figure may be compared with 1,346,000 bushels occupying general cold storage at the peak last season. In New Jersey some 66,000 bushels or about 8 percent of the crop stored at the peak will have to be put in general cold storage. This is less than 10 percent of the holdings in general cold storage at the peak in 1942. This reduction is due to two factors: (1) The crop in this State is expected to be down about 28 percent based on 1942. (2) The construction of apple houses of some 96,000-bushel capacity. Pennsylvania at the peak should have space in apple houses for some 280,000 bushels in excess of expected demands. This situation may be compared with that of last year, when not only was there no surplus space but 1,080,000 bushels had to be placed in general cold storage. The same factors as those in New Jersey have contributed toward easing the situation in Pennsylvania.

In the South Atlantic States the following groups have storage which is more than adequate to take care of the expected peak holdings in apple houses: Delaware, Maryland, and the District of Columbia; and Virginia and West Virginia. In the North Carolina, South Carolina, and Georgia group, it will be necessary to store only about 48,000 bushels in general cold storage. Of course, in the neighboring Virginias there should be space above the local demand for over 4 million bushels. (See table 2, column 11.)

In the North Central States, apple storage houses appear to be adequate in general. In Michigan on December 1 of last year, 764,000 bushels were in general cold storage, and only some 11,000 bushels must go into general cold storage this year if apple houses at present under construction are completed before the peak of the season. In Illinois 219,000 bushels will have to be stored in general cold storage as compared with 677,000 bushels in general cold storage on December 1 of last year. Wisconsin, Minnesota, and Iowa have no reported apple houses, but production in these three States is small and only about 364,000 bushels will have to occupy general cold storage. In general, it would seem to appear that capacity in apple houses is less adequate in the North Central States than in any other section.

In the Western States only California, Oregon, and Washington are significant producers of apples and pears. Of the three, only California will be compelled to store any of the crop in general cold storage, as the outlook now stands. California is expecting an excellent crop both of apples and pears this year. The anticipated apple crop is about 843,000 bushels above the average of 7,872,000, and the pear crop about 1,742,000 bushels above the average of 9,842,000 bushels. The two crops combined are about 15 percent better than average, and about 27 percent better than last year. If the same proportion of these crops is stored at the peak this season as last, about 2,672,000 bushels will occupy cold storage space on December 1. There is space in apple house coolers for 1,723,000 bushels, some of which space has been constructed this year. A balance of 949,000 bushels must occupy general cold storage.

However, because the national crop is so far below normal, and because the neighboring States of Washington and Oregon which compete for the same markets are likewise producing a less than average crop, the California surplus should tend to equalize itself. Many of these 949,000 bushels should find storage space in eastern terminal markets.

#### Storage as Compared with Last Year's Tight Spots

The situation in New York State is apparently reversed from that of last year. Last year, production in the Hudson Valley was up and that in western New York was mediocre. This year, production in western New York appears to be down only slightly from the average, whereas that of the Hudson Valley seems to be down about 35 percent from the average. The only counties in this State that are expecting a better than average crop are those in the Lake Champlain area, but production in that area is such a small portion of that for the entire State that it appears insignificant. It is repeated that storage appears to be more than adequate in New York State in general, and specifically in each of the two main apple-producing areas.

During last season, space was tight in Massachusetts, Rhode Island, and Connecticut, particularly in Massachusetts. This year there should be no problem in that area because of production being down 55 percent or more from 1942 in Connecticut, and down 25 and 14 percent, respectively, in Massachusetts and Rhode Island. Whereas Massachusetts must store some 127,000 bushels in general storage, Rhode Island and Connecticut combined have 448,000 bushels of apple house capacity in excess of expected peak demands.

Last year the crop in Michigan exceeded capacity for storage. This year the situation should be less critical. Production appears down about 35 percent from last year and about 25 percent from the average.



The crop around Muskegon and St. Joseph is reported somewhat below average, and in the eastern part of the State around St. Clair County it is reported much below average. Considerable construction of storage houses has been completed or is in progress in that State. Apparently only some 11,000 bushels must move into general cold storage on the basis of the anticipated crop.

Last year space was tight in Oregon, though the production was below average. Even though the production was below average, the small amount of available space in general cold storage houses in that State necessitated the moving of a substantial quantity of apples to other States for storage. It appears that production is down about 25 percent from last year. The crop is expected to be down about 20 percent from the average production. There is capacity in coolers of apple houses for 2,600,000 bushels, and only about 1,368,000 bushels are expected for storage at the peak. Therefore, no storage problem should develop there.

In conclusion, storage space for the Nation as a whole appears to be more than adequate, since the capacity of coolers in apple houses throughout the country is in excess of 44,000,000 bushels and since the expected storage peak holdings of apples and pears this year are only about 28,000,000 bushels. The crops are off, on an average, about 23 percent from the normal and about 26 percent from last year. Construction of new space to the extent of at least 694,000-bushel capacity is under way or completed, which should serve considerably toward relieving the pressure in any isolated tight spot.

In addition to the easing of the apple-storage situation due to new construction and due to condition of the crop, certain items which have occupied general cold storage in the past are now moving out of cold storage under the provisions of Food Distribution Order 70. This out-movement is contributing toward a relaxation of the shortage of storage space.

Table 1.—Production of apples and pears in the United States, by State,  
for selected periods

State by area	Commercial production of apples			Total production of pears		
	Average 1934-39	1942	Indicated 1943	Average 1930-39	1942	Indicated 1943
	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.
<b><u>EASTERN STATES</u></b>						
<b>NORTH ATLANTIC</b>						
Maine	538	730	735	10	10	5
New Hampshire	700	961	864	12	12	6
Vermont	508	731	748	6	4	1
Massachusetts	2,488	3,400	2,552	71	50	26
Rhode Island	270	332	286	10	6	6
Connecticut	1,357	1,922	858	56	96	39
New York	16,183	17,500	12,985	1,284	1,234	495
New Jersey	3,404	3,239	2,340	71	71	46
Pennsylvania	9,090	10,031	6,110	609	491	211
<b>SOUTH ATLANTIC</b>						
Delaware	1,156	940	464	12	8	3
Maryland	1,911	2,211	1,026	80	54	21
Virginia	11,085	13,908	5,940	304	528	26
West Virginia	4,317	4,686	2,640	60	145	24
North Carolina	1,009	1,086	629	278	440	94
<b>NORTH CENTRAL</b>						
Ohio	4,998	6,384	2,338	592	422	144
Indiana	1,576	1,392	1,081	306	201	75
Illinois	3,071	2,970	2,914	505	450	163
Michigan	7,899	9,234	6,016	1,065	1,245	481
Wisconsin	610	737	818			
Minnesota	208	168	182		71	54
Iowa	303	302	38	105	415	150
Missouri	1,501	1,075	1,056	322	28	17
Nebraska	338	118	34	32	144	50
Kansas	794	754	364	136		
<b>SOUTH CENTRAL</b>						
Kentucky	264	179	308	182	292	72
Arkansas	771	616	643	152	202	77
Tennessee	356	354	261	228	415	132
<b><u>WESTERN STATES</u></b>						
Montana	361	173	258			
Idaho	3,650	2,139	600	62	48	48
Colorado	1,553	1,595	1,352	220	177	196
New Mexico	713	752	789	40	53	61
Utah	388	307	486	96	82	185
Washington	28,758	27,552	23,520	5,537	6,723	5,530
Oregon	3,414	2,660	2,442	3,307	4,475	2,940
California	7,872	6,090	8,715	9,842	9,834	11,584
<b>UNITED STATES</b>	<b>123,414</b>	<b>127,228</b>	<b>92,392</b>	<b>25,592</b>	<b>28,426</b>	<b>22,962</b>

Sources: Crop Production, Crop Reporting Board, Bureau of Agricultural Economics,  
December 1942; also release of September 1, 1943.

Table 1.—Production of apples and pears in the United States, by State for selected periods—Continued

State by areas	Combined apples and pears			
	1942	Indicated 1943	Percentage of 1942 apple and pear crop expected this year	Percentage of average (1934-39) apple and pear crop expected this year
	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>Percent</u>	<u>Percent</u>
<u>EASTERN STATES</u>				
NORTH ATLANTIC				
Maine	740	740	100	135
New Hampshire	973	870	89	122
Vermont	735	749	102	146
Massachusetts	3,450	2,578	75	101
Rhode Island	338	292	86	104
Connecticut	2,018	897	44	64
New York	18,734	13,480	72	77
New Jersey	3,310	2,386	72	69
Pennsylvania	10,522	6,321	60	65
SOUTH ATLANTIC				
Delaware	948	467	49	40
Maryland	2,265	1,047	46	53
Virginia	14,436	5,966	41	52
West Virginia	4,831	2,664	55	61
North Carolina	1,526	723	47	56
NORTH CENTRAL				
Ohio	6,806	2,482	36	44
Indiana	1,593	1,156	73	62
Illinois	3,420	3,077	90	86
Michigan	10,479	6,497	62	72
Wisconsin	737	818	111	134
Minnesota	168	182	108	88
Iowa	373	92	25	23
Missouri	1,490	1,206	81	66
Nebraska	146	51	35	14
Kansas	898	414	46	45
SOUTH CENTRAL				
Kentucky	471	380	81	85
Arkansas	818	720	88	78
Tennessee	769	393	51	67
<u>WESTERN STATES</u>				
Montana	173	258	149	71
Idaho	2,187	648	30	18
Colorado	1,772	1,548	87	87
New Mexico	805	850	106	113
Utah	389	671	173	139
Washington	34,275	29,050	85	85
Oregon	7,135	5,382	75	80
California	15,924	20,299	127	115
UNITED STATES	155,654	115,354	74	77

Sources: Crop Production, Crop Reporting Board, Bureau of Agricultural Economics, December 1942; also release of September 1, 1943





Table 2.--Capacity of apple houses, holdings of apples and pears at 1942 and expected 1943 peaks, space needed in general cold storage houses, by State and geographic divisions, detail of excess capacity in neighboring divisions

	Net piling space in apple house coolers 1,000 cu. ft.	Capacity of coolers in apple houses/1 1,000 bu.	Cold storage holdings of apples and pears at the peak in 1942 /2						Expected peak holdings of apples and pears in 1943/2 1,000 bu.	Holdings expected necessary in general cold storage warehouses at peak '43 1,000 bu.	Space in apple houses in excess of expected peak demands 1,000 bu.
			In apple houses		Total	In general cold storage		Total			
			Apples	Pears		Apples	Pears				
NORTH ATLANTIC STATES											
Me., N. H., and Vt.	793	344	264		264	99	354	10			
Mass.	2,022	879	1,077		1,077	268	1,006	127			
R. I., and Conn.	2,134	928	731		731	192	480				448
N. Y.	18,986	8,255	3,693	39	3,732	2,252	4,323	66			3,932
N. J.	1,919	834	427		427	812	900				280
Pa.	3,357	1,460	880		880	1,080	1,180				
SOUTH ATLANTIC STATES											
Del., Md., and D. C.	457	199	88		88	155	138				61
Va., and W. Va.	15,096	6,563	4,129		4,129	814	2,142	48			4,421
N. C., S. C., and Ga.	85	37	1		1	113	85				
NORTH CENTRAL STATES											
Ohio	869	378	319		319	586	331				47
Ind.	470	204	100		100	120	160				44
Ill.	1,569	682	324		324	671	901	219			
Mich.	1,758	764	486		486	735	775	11			
Wis.						144	178	178			
Minn. and Iowa						184	164	164			
Mo.	1,384	602	236		236	325	457	52			145
Nebr. and Kans.	117	51	20		20	213	103				
SOUTH CENTRAL STATES											
Ala. and La.											
Ky. and Tenn.	277	120	40		40	71	60	60			31
Ark., Tex., and Okla.	170	74	10		10	145	130	56			
WESTERN STATES											
Idaho	734	319	62	1	63	2	19	50			300
Colo., N. Mex., Utah	16	7				52	57				
PACIFIC STATES											
Wash.	39,928	17,340	11,217	618	11,835	216	10,220				7,120
Oreg.	5,996	2,607	594	825	1,419	19	1,368				1,239
Calif.	3,964	1,723	1,183	3	1,186	666	2,672	949			
TOTAL	102,101	44,370	25,881	1,486	27,367	10,033	10,772	1,990			18,068

1 - 1 bushel of apples in storage estimated to require 2.3 cubic feet of net piling space.

2 - December 1, peak period of apple holdings for the Nation used uniformly as the peak.

3 - Percentage of 1942 apple and pear crop expected this year, times total holdings of apples and pears, both in apple houses and in general cold storage, by States or State groups.

